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**The inevitability of knotting: Polymers, filaments and surfaces**

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Knots are ubiquitous in physics and in biology. They occur in biopolymers such as DNA and proteins, in vortices in fluids, in optical beams, in liquid crystals and in surfaces. Indeed, long flexible objects are knotted with high probability. This talk will review some rigorous results about the inevitability of knotting in ring polymers and in surfaces, and will discuss the extension of these results to other physical systems. For many lattice models one can prove that knotting is a high probability event, by showing that a local structure that ensures knotting occurs with high probability somewhere in large flexible structures.